## REMARKS

Responsive to the Non-Final Office Action mailed August 5, 2009, Applicant has studied the Examiner's comments. Claims 1, 3 through 9, 11, 12, 14 and 15 were pending. Claims 2, 10 and 13 were previously cancelled. Claims 3 and 8 have been amended. Applicant requests that this Response and Amendment be entered and considered. In view of the following remarks and the prior remaks set out above, Applicant respectfully submits that the application is in condition for allowance.

**Claim Rejections:**

**35 U.S.C. 102, Claims 1, 3 – 9, 11 – 12 and 14 – 18 were rejected under 35 U.S.C. 102(b) for anticipation by Xu et al.**

The differences between the present invention and Xu et al. will be described with reference to claim 1 and is equally applicable to all the other claims set out above.

The invention as defined in claim 1 proposes:

- **processing two series of seismic data representative of the same zone**

*The invention:*

Note $Z_1$ and $Z_2$ the two series of seismic data.

These seismic data are of the same type (i.e. two-way travel times).

$Z_1$ and $Z_2$ correspond to seismic data acquired at different instants or for seismic attributes that are different (see paragraph [0028] of US2005/0209895).

*Xu et al.:*

Note $Z_1$ and $Z_2$ the two series of seismic data.

These data are of different types in the case of Xu et al.: indeed, $Z_1$ are well data whereas $Z_2$ are two-way travel times data (see page 5 right column, two last paragraphs).

- **determining a cross variogram of theses data series**

*The invention:*

In the case of the present invention, the cross-variogram has the following value:

$$\gamma_{12}(h) = \frac{1}{N} \sum (Z_1(x) - Z_1(x + h))(Z_2(x) - Z_2(x + h))$$

where x and x+h designate the pairs of points taken into consideration in the direction and for the distance h for which the value of the variogram is determined.

*Xu et al.:*

Such step is not described in Xu et al., because Xu et al. comprise a single set of two-way travel times data (i.e. $Z_2$)

- **Solving a co-kriging equation which results from this determination**

*The invention:*

Based on the above cross-variogram, the present invention proposes estimating a function corresponding thereto (see § [0038] of US2005/0209895):

$$Z^*_{12}(x) = \sum_{a1=1}^{N} \lambda_a^1 Z_a^1 + \sum_{\beta=1}^{N} \lambda_\beta^2 Z_\beta^2$$

*Xu et al.:*

Such step is not described in Xu et al., the estimator $Z^*_1$ of Xu et al. is an estimator of $Z_1$ and not an estimator of the part that is common to $Z_1$ and $Z_2$.

Thus, Xu et al. do not determine a cross-variogram of $Z_1$ and $Z_2$ : indeed, as discussed above, the data $Z_1$ (well data) and $Z_2$ (two-way travel times data) of Xu et al. are of different types in the case of Xu et al.

In contrast, Xu et al. propose solving the following simple co-kriging equation:

$$Z^*_1(u) - m1 = \sum_{a=1}^{n1} \lambda_a^1 [Z_1(U_a) - m1] + \lambda_a^2 [Z_2(U_a) - m2]$$

Where $Z^*_1$ is the estimate of $Z_1$.

- **resolving each of the data series into the sum of their common component and orthogonal residues**

*The invention:*

The present invention relates to the filtering of seismic data.

As mentioned in the description of the present application (see paragraph [0035] of US2005/0209895) in order to filter two series of seismic data ($Z_1$, $Z_2$), it is proposed to resolve each of these two series of seismic data ($Z_1$, $Z_2$) into the sum of their common component (Common Part) plus orthogonal residues ($R_1$ $R_2$).

$Z_1$ = Common Part + $R_1$,

$Z_2$ = Common Part + $R_2$,

Where:

- Common Part is the invariant part between $Z_1$ and $Z_2$
- $R_1$ and $R_2$ (i.e. the orthogonal residues) correspond to noise.

As described in detail in the present application, the term "common part" refers to a component that is common to both $Z_1$ and $Z_2$ (see paragraph [0043] of US2005/0209895). In other words, the "common component" corresponds to the invariant part between $Z_1$ and $Z_2$.

*Xu et al.:*

In contrast, Xu et al. relate to the integration of seismic data in reservoir modelling.

As mentioned on page 2, left column, 5th paragraph of Xu et al., the goal of integration is to produce one or several maps for the distribution of $Z_1$(u) over field A utilizing both hard data ($Z_1$(u) corresponding to well data: see page 5, right column,

last paragraph) and soft data ($Z_2(u)$ corresponding to two-way travel times data: see page 5, right column, last paragraph)

Thus, in the case of Xu et al. the two series of data $Z_1$ and $Z_2$ are never expressed as the sum of their common component and orthogonal residues since these data are of different types (i.e. hard data $Z_1$ and soft data $Z_2$) in the case of Xu et al.

In view of the above, it is clear that the aims of the present invention and of Xu et al. are totally different, and the ways to achieve these goals are also totally different.

## CONCLUSION

Applicant respectfully submits that all issues have been adequately addressed, that all claims are allowable, and that the case should be advanced to issuance.

If the Examiner has any questions or wishes to discuss the claims, Applicant encourages the Examiner to call the undersigned at the telephone number indicated below.

Respectfully submitted,

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By: _____

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